Ease-of-use, preference, confidence, and satisfaction with Revolizer, a novel dry powder inhaler, in an Indian population

Introduction

For chronic obstructive airway diseases like asthma and COPD, administering medications through inhalation route is an efficient form of drug delivery. The key aspects of an ideal drug delivery system are: ease of use, reproducible dosing with optimal drug deposition, a feedback mechanism to ensure correct dosing, require minimal maintenance and must be environmentally friendly.

Two important factors to be considered while prescribing any inhaler to the patient are: ease of use and patient preference. Confidence and satisfaction with the inhaler device can help improve patient acceptance towards the device and the therapy, thus improving the treatment outcomes and reducing the healthcare costs.

Dry powder inhalers (DPIs) are one of the most preferred inhalation drug delivery systems. Their advantages of being breath-actuated, easy to use, and compact make the DPIs reasonably well accepted by patients and their prescribers. Revolizer® is a novel unit dose DPI device having adequate drug deposition and a simple inhalation technique, allowing patients to confirm dose delivery as they can see, hear, and taste the drug.

The Revolizer

The Revolizer is a novel DPI device, which has been designed and developed to address the critical requirements of an ideal inhalation device. It provides accurate dosing and excellent lung deposition even at low inspiratory flow rates and is very easy to use and maintain.
The iPrefer Study

The iPrefer study was conducted to assess the ease of use, preference, confidence and satisfaction with Revolizer in the Indian population. This was an open-label, prospective, multi-centre study conducted with 100 participants. (50 healthy volunteers, 45 patients with mild asthma and 5 patients with mild COPD) The study was carried out over two visits. On the first visit (Day 1), the investigator explained and demonstrated the inhalation technique of Revolizer and noted the time taken by the participants to achieve three consecutive correct attempts. On the second visit (Day 4), the participants demonstrated the inhalation technique without retraining and the number and types of errors were noted. Then, the participants were trained twice, and the time taken to perform three consecutive correct attempts and the number and types of errors noted. At both visits, participants were asked about the ease of use, preference, confidence, and satisfaction with Revolizer using a questionnaire and their responses were noted.

Around 93.84% participants found the Revolizer easy to operate, understand and remember.

<table>
<thead>
<tr>
<th>Usability</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy for me to remember how to use</td>
<td>3%</td>
<td>41%</td>
<td>53%</td>
</tr>
<tr>
<td>Easy to operate</td>
<td>5%</td>
<td>48%</td>
<td>47%</td>
</tr>
<tr>
<td>Easy to understand how to use</td>
<td>1%</td>
<td>56%</td>
<td>43%</td>
</tr>
</tbody>
</table>

78% patients preferred the Revolizer over their current device.
89.67% participants responded positively in terms of various qualitative attributes such as shape, color, portability, and likeability, and the comfort while operating and handling the device. The Revolizer scored high on usability, response toward qualitative attributes, confidence, and satisfaction of patients at both the visits.

The average time taken by patients for three consecutive correct attempts approximately 3.75 min at first visit and 3.07 min at second visit. In addition, the number of attempts required for the first correct attempt was significantly reduced at the second visit.

The most frequent errors while using the device included improper or inadequate exhalation prior to inhalation and slow inhalation. Without retraining at the second visit, 44% of the participants completed single attempt with no error.

Overall, the participants felt confident and satisfied using the device. They found it easy to use and reported preference for the device.

These findings suggest that Revolizer is an easy-to-use and a preferred device. It scores high on the satisfaction and confidence in patients and individuals who have never used an inhaler device. Revolizer is a patient-friendly, portable, and comfortable device which is easy to operate and handle. It has the potential to become the device of choice for both patients and physicians alike.

**Key Features Of The Revolizer**

- Does not require coordination between inhalation and actuation.
• Easy to learn, remember and to teach how to use correctly.
• High drug deposition across various inspiratory flow rates (as low as 30L/min)
• Accurate, consistent and effective in delivering medication to the lungs even at low inspiratory flow rates (as low as 30L/min).
• Ergonomic design.
• Portable- the pouch snugly fits into the pocket.
• Patient feedback- due to taste of lactose in the mouth.
• Transparency helps provide visual confirmation of the dose being administered.
• Robust.
• Visually appealing to the patient.

How To Use The Revolizer?

To open, hold the revolizer at the base with one hand.

Pull back the mouthpiece as shown till both arrows meet.

Remove a Rotacap from its bottle. Insert the Rotacap into the Rotacap chamber with the transparent end facing down as shown.

Close the mouthpiece firmly. A click sound will indicate proper closing of the revolizer.
The Revolizer is easy to use and maintain. It must be cleaned at least once a week to ensure proper functioning. The mouthpiece and Rotacap chamber should be rinsed in clean running water and air dried, preferably overnight.

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